

## Worksheet 3.1 Special Pairs of Angles

Classify each of the statements as true or false.

1. If two angles are complementary and congruent, each has a measure of  $45^\circ$ .
2. If two angles are congruent and supplementary, then each is a right angle.
3. Perpendicular lines form four right angles.
4. Two vertical angles may be complementary.
5. If  $m\angle 1 = 20$ ,  $m\angle 2 = 40$ , and  $m\angle 3 = 50$ , then the three angles are complementary.

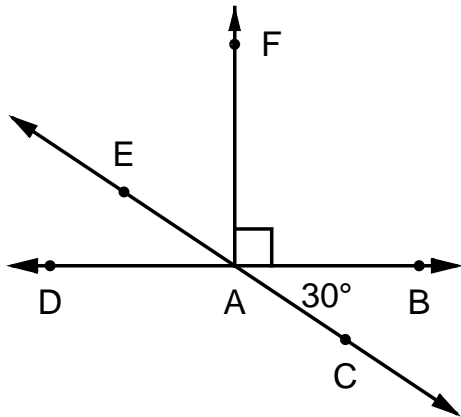
Find the measure of a complement and a supplement of  $\angle A$ .

6.  $m\angle A = 20$
7.  $m\angle A = 75$
8.  $m\angle A = 89$
9. Two complementary angles have measures in the ratio 2:4. What is the measure of the *larger* angle?
10. Two congruent angles are complementary. What is the measure of each angle?
11. If  $\overleftrightarrow{AB}$  and  $\overleftrightarrow{CD}$  intersect at E,  $m\angle AEC = 3x$ , and  $m\angle BED = (5x - 6)$ , find the value of  $x$ , and the measure of each angle.
12. The measure of two supplementary angles are in the ratio 2:7. Find the measure of the *smaller* angle.

13. If  $\angle C$  is the complement of  $\angle A$ , and  $\angle S$  is the supplement of  $\angle A$ , which statement is always true?

- (a)  $m\angle C > m\angle S$       (b)  $m\angle C + m\angle S = 90$       (c)  $m\angle C + m\angle S = 180$       (d)  $m\angle C < m\angle S$

In the diagram below,  $\overleftrightarrow{DB}$  and  $\overleftrightarrow{EC}$  intersect at A.  $\overrightarrow{AF} \perp \overleftrightarrow{DB}$ , and  $m\angle BAC = 30$ .



14. Find the measure of  $\angle EAD$ .

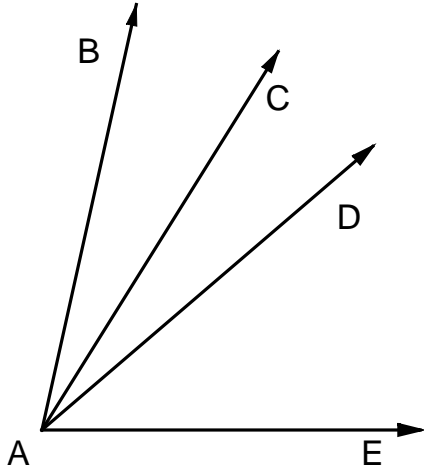
15. Find the measure of  $\angle FAC$ .

16.  $\angle DAE$  and  $\angle EAF$  may be classified as what kind of special angles?

17. What is the sum of  $m\angle DAE$  and  $m\angle EAB$ ?

18. Find the measure of  $\angle BAE$ .

Questions 19 - 22 refer to the following.



19. If  $m\angle BAC = (2x - 5)$ ,  $m\angle CAD = (x + 1)$ , and  $m\angle BAD = 50$ , find the value of  $x$ .

20. If  $\overrightarrow{AC}$  bisects  $\angle BAD$  and  $m\angle BAD = 62$ , find  $m\angle BAC$ .

21. If  $\overrightarrow{AC}$  bisects  $\angle BAD$ ,  $m\angle BAC = (y - 8)$ , and  $m\angle CAD = (5y - 100)$ , find the value of  $y$ .

22. If  $m\angle EAD = 20$  and  $m\angle DAC = 45$ , find  $m\angle EAC$ .